

IN THE CLAIMS:

Claims 8, 11, and 13 through 26 have been amended herein. All of the pending claims 1 through 26 are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

1. (Previously presented) An assembly method for a semiconductor die and a portion of a lead frame comprising:
providing the lead frame having a plurality of lead members, each lead member of the plurality of lead members having a lead end portion connected to a portion of the lead frame, each lead member of the plurality of lead members having a length, having a thickness, and having a free end portion;
forming a stress relief portion in the plurality of lead members, the stress relief portion extending along the length of each lead member of the plurality of lead members between the free end portion and the lead end portion thereof, the stress relief portion having a predetermined length and depth extending into the thickness of each lead member of the plurality of lead members for each lead member to have an amount of flexure, the stress relief portion formed by one process of a machining process, an etching process, a process using an electron beam, and a deforming process;
providing a die having an active surface, having a plurality of outer edges, having a width, having a length greater than the width, and having a plurality of bond pads extending along a center portion of the active surface along the length of the die, at least one bond pad of the plurality of bond pads for connection to the plurality of lead members;
providing adhesive;
placing the adhesive continuously without interruption throughout a portion of the active surface of the die extending from adjacent each side of the plurality of bond pads except for a portion of the active surface of the die adjacent the plurality of outer edges of the die from which the plurality of lead members extends from the lead end portion over at least one

outer edge of the plurality of outer edges of the die having the free end portion thereof located adjacent the at least one bond pad of the plurality of bond pads;
superimposing the lead frame on the die with the active surface facing the lead frame and the plurality of lead members extending over the active surface of the die, the stress relief portion of the plurality of lead members extending from adjacent the at least one outer edge of the plurality of outer edges of the die, extending over a portion of the active surface of the die having no adhesive thereon, and over a portion of the adhesive on a portion of the active surface of the die;
securing the plurality of lead members to the portion of the active surface of the die using the adhesive;
allowing a portion of the plurality of lead members to be unsecured to the portion of the active surface of the die having no adhesive thereon;
providing an area located between the portion of the active surface of the die having no adhesive thereon and the stress relief portion of the plurality of lead members having an enlarged space compared to a space between the portion of the active surface of the die having adhesive thereon and the stress relief portion of the plurality of lead members; and
sizing the area for allowing passage of filler particles of molding material therethrough in a transfer molding operation for preventing damage from the filler particles by the transfer molding operation to the portion of the active surface of the die having no adhesive thereon and allowing an amount of flexure for movement of the plurality of lead members with respect to the die by allowing passage of the filler particles from the area.

2. (Previously presented) The method of claim 1, further comprising:
coining the stress relief portion in the length of the plurality of lead members.

3. (Previously presented) The method of claim 1, further comprising:
stamping the stress relief portion in the plurality of lead members.

4. (Previously presented) The method of claim 1, wherein forming the stress relief portion comprises forming a thinned portion along a length of the plurality of lead members.

5. (Previously presented) The method of claim 4, wherein forming the thinned portion comprises providing a predetermined amount of flexure.

6. (Previously presented) The method of claim 5, wherein providing the amount of flexure includes providing bending and torsional flexure.

7. (Previously presented) An assembly method for a semiconductor die and a lead frame having a plurality of leads, the method forming an assembly having the plurality of leads of the lead frame fixed in position with respect to the semiconductor die and having material in a molding operation having filler particles therein surrounding a portion of the plurality of leads and the semiconductor die, the method comprising:
providing the lead frame having a plurality of lead members, each lead member of the plurality of lead members having a lead end portion connected to a portion of the lead frame, each lead member of the plurality of lead members having a length, having a thickness, having a lead end, and having a free end portion;
forming a stress relief portion in each lead member of the plurality of lead members, the stress relief portion extending along the length of each lead member of the plurality of lead members between the free end portion and the lead end portion thereof, the stress relief portion having a predetermined length and depth and amount of flexure;
providing a die having an active surface, having four outer edges, having a width, having a length larger than the width, having a plurality of bond pads extending along a center portion of the active surface along the length of the die, the plurality of bond pads for connection to the plurality of lead members;
providing an adhesive;

applying the adhesive continuously without interruption throughout a portion of the active surface of the semiconductor die extending from adjacent each side of the plurality of bond pads except for a portion of the active surface adjacent the four outer edges of the semiconductor die, each lead member of the plurality of lead members terminating adjacent at least one bond pad of the plurality of bond pads;

superimposing the lead frame on the die with the active surface facing the lead frame and the plurality of lead members extending over the active surface of the die, the stress relief portion of each lead member of the plurality of lead members extending from adjacent at least one outer edge of the die, over a portion of the active surface of the die having no adhesive thereon, and over a portion of the adhesive on a portion of the active surface of the die;

securing each lead member of the plurality of lead members to a portion of the active surface of the die using the adhesive;

allowing a portion of each lead member of the plurality of lead members to be unsecured to the portion of the active surface of the die having no adhesive thereon;

providing an area located between the portion of the active surface of the die having no adhesive thereon and the stress relief portion of each lead member of the plurality of lead members having an enlarged space compared to a space between the portion of the active surface of the die having adhesive thereon and the stress relief portion of each lead member of the plurality of lead members; and

sizing the enlarged space for allowing substantially free passage of material having the filler particles therein through the enlarged space in a transfer molding operation, the enlarged space for preventing damage from the filler particles to the portion of the active surface of the die having no adhesive thereon and allowing an increased amount of the flexure for movement of each lead member of the plurality of lead members with respect to the die by allowing free passage of the filler particles through the enlarged space in the transfer molding operation.

8. (Currently amended) The method of claim 7, further comprising:
cantilevering each lead member of the plurality of lead members to extend over the active surface
of the die wherein the stress relief portion of the at least one lead member extending
along a portion of a length of the at least one lead member extends over a portion of the
active surface to adjacent ~~the at~~ at least one outer edge of the die.

9. (Previously presented) The method of claim 7, wherein securing each lead
member of the plurality of lead members comprises adhesively securing the die by a layer of
adhesive.

10. (Previously presented) The method of claim 9, wherein adhesively securing
comprises securing each lead member of the plurality of lead members to the die by at least one
layer of adhesive applied to a strip of tape.

11. (Currently amended) The method of claim 9, wherein adhesively securing
comprises securing each lead member of the plurality of lead members to the die by the at least
one layer of adhesive applied to each side ~~of a~~ of the strip of tape.

12. (Previously presented) An assembly comprising:
a semiconductor die having an active surface and a plurality of sides;
at least one adhesive segment having an outer edge and adhering to a portion of the active surface
of the semiconductor die;
material having a filler material therein having a particle size distribution and an average particle
size diameter; and
a lead frame including a plurality of lead members, at least one lead member of the plurality of
lead members having a lead end portion connected to a portion of the lead frame, having
a length, having a thickness, and having a free end portion extending over a portion of the
active surface of the semiconductor die, the at least one lead member including a stress

relief portion formed therein, the stress relief portion extending over a portion of the active surface of the semiconductor die, extending along a portion of the length of the at least one lead member at a location between the free end portion and the lead end portion and extending partially through the thickness of the at least one lead member, the stress relief portion formed in the at least one lead member extending along the length of the at least one lead member from a location proximate the outer edge of the at least one adhesive segment to a location proximate a side of the plurality of sides of the semiconductor die, the stress relief portion providing an enlarged space between a lower surface of the at least one lead member and a portion of the active surface of the semiconductor die, the enlarged space allowing the material to flow therethrough without the filler material therein substantially damaging the portion of the active surface of the semiconductor die.

13. (Currently amended) An assembly using a material containing a portion thereof having a particle size distribution and an average particle size diameter within the particle size distribution, comprising:

a semiconductor die having an active surface and a plurality of sides;

at least one adhesive segment having an outer edge and adhesively secured to a portion of the active surface of the semiconductor die; and

a lead frame including a plurality of lead members, at least one lead member of the plurality of lead members having a lead end portion connected to a portion of the lead frame, having a length, having a thickness, and having a free end portion extending over a portion of the active surface of the semiconductor die, the at least one lead member of the plurality of lead members having a first portion of the length thereof adhered to the active surface of the semiconductor die and having a second portion of the length thereof extending outwardly over the active surface unadhered thereto, the at least one lead member having a stress relief portion formed therein, the stress relief portion extending over a portion of the

active surface of the semiconductor die, extending along a portion of the length of the at least one lead member at a location between the free end portion and the lead end portion and extending partially through the thickness of the at least one lead member, the stress relief portion formed in the at least one lead member extending along the length of the at least one lead member from a location proximate the outer edge of the at least one adhesive segment to a location proximate a side of the plurality of sides of the semiconductor die, the stress relief portion providing an enlarged space between a lower surface of the at least one lead member and a portion of the active surface of the semiconductor die, the enlarged space allowing the material to flow therethrough without the ~~filler~~ material therein substantially damaging the portion of the active surface of the semiconductor die.

14. (Currently amended) The assembly of ~~claim 2,~~ claim 13, wherein the first portion of the length of the at least one lead member is adhered to the semiconductor die by the at least one adhesive segment having the outer edge thereof, the outer edge of the at least one adhesive segment being located substantially parallel to a side of the plurality of sides of the semiconductor die and being located substantially transverse to the length of the at least one lead member.

15. (Currently amended) The assembly of ~~claim 3,~~ claim 13, wherein the stress relief portion extends ~~along a~~ along the length of each lead member of the plurality of lead members from substantially the outer edge of the at least one adhesive segment to a location proximate the side of the plurality of sides of the semiconductor die.

16. (Currently amended) The assembly of ~~claim 3,~~ claim 13, wherein the stress relief portion longitudinally extends ~~along a~~ along the length of each lead member of the plurality of lead members from a position substantially overlaying the outer edge of the at least one adhesive segment to a location substantially beyond the side of the plurality of sides of the semiconductor die.

17. (Currently amended) The assembly of ~~claim 1,~~ claim 13, wherein the stress relief portion is a recess formed in each lead member of the plurality of lead members.

18. (Currently amended) The assembly of ~~claim 6,~~ claim 17, wherein the recess is a transverse slot positioned on an underside of each lead member of the plurality of lead members.

19. (Currently amended) The assembly of ~~claim 7,~~ claim 18, wherein the transverse slot forms a thinned portion along a longitudinal length of each lead member of the plurality of lead members.

20. (Currently amended) An assembly having a portion thereof containing a material having a filler portion thereof having a particle size distribution and an average particle size diameter within the particle size distribution comprising:
a semiconductor die having an active surface and a plurality of sides;
at least one adhesive segment having an outer edge and adhesively secured and thereby connected to a portion of the active surface of the semiconductor die; and
a lead frame including a plurality of lead members, at least one lead member of the plurality of lead members having a lead end portion connected to a portion of the lead frame, having a length, having a thickness, and having a free end portion extending over a portion of the active surface of the semiconductor die, the at least one lead member of the plurality of lead members having a first portion of the length thereof adhered to the active surface of the semiconductor die and

having a second portion of the length thereof extending outwardly over the active surface unadhered thereto, the at least one lead member having a stress relief portion formed therein, the stress relief portion extending over a portion of the active surface of the semiconductor die, extending along a portion of the length of the at least one lead member at a location between the free end portion and the lead end portion and extending partially through the thickness of the at least one lead member, the stress relief portion formed in the at least one lead member extending along the length of the at least one lead member from a location proximate a side of the plurality of sides of the semiconductor die to a location proximate the outer edge of the at least one adhesive segment, the stress relief portion providing an enlarged space between a lower surface of the at least one lead member and a portion of the active surface of the semiconductor die, the enlarged space allowing the material to flow therethrough without the filler portion therein substantially damaging the portion of the active surface of the semiconductor die.

21. (Currently amended) The assembly of ~~claim 9,~~ claim 20, wherein the first portion of the length of the at least one lead member is adhered to the semiconductor die by the at least one adhesive segment having the outer edge thereof, the outer edge of the at least one adhesive segment being located substantially parallel to a side of the plurality of sides of the semiconductor die and being located substantially transverse to the length of the at least one lead member.

22. (Currently amended) The assembly of ~~claim 10,~~ claim 21, wherein the stress relief portion extends ~~along a~~ along the length of each lead member of the plurality of lead members from substantially the outer edge of the at least one adhesive segment to a location proximate the side of the plurality of sides of the semiconductor die.

23. (Currently amended) The assembly of ~~claim 10,~~ claim 21, wherein the stress relief portion longitudinally extends ~~along a~~ along the length of each lead member of the plurality of lead members from a position substantially overlaying the outer edge of the at least one adhesive segment to a location substantially beyond the side of the plurality of sides of the semiconductor die.

24. (Currently amended) The assembly of ~~claim 9,~~ claim 20, wherein the stress relief portion is a recess formed in each lead member of the plurality of lead members.

25. (Currently amended) The assembly of ~~claim 13,~~ claim 24, wherein the recess is a transverse slot positioned on an underside of each lead member of the plurality of lead members.

26. (Currently amended) The assembly of ~~claim 14,~~ claim 25, wherein the transverse slot forms a thinned portion along a longitudinal length of each lead member of the plurality of lead members.